IBM

IBM Bank Teller Business Component, Enterprise Edition
IBM Bank Teller Business Component, Workgroup Edition

Installation Guide

Version 4.0.3

… A member of the WebSphere Business Components family

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 28.

Fourth Edition (December 2001)

This edition applies to version 4.0.3 of IBM Bank Teller Business Component, Enterprise Edition, and IBM Bank Teller Business Component, Workgroup Edition (product number 5724-A11), and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product.

Corrections and suggestions for future revisions of this document are appreciated. Mail your comments to:

IBM Canada Ltd. Laboratory
B3/KB7/8200/MKM
8200 Warden Avenue
Markham, Ontario, Canada L6G 1C7

When you send information to IBM, you grant to IBM a nonexclusive right to use or distribute the information in any way they believe appropriate without incurring any obligation to you.

Contents

About this guide

This guide contains installation instructions for version 4.0.3 of IBM Bank Teller Business Component, Enterprise Edition, and IBM Bank Teller Business Component, Workgroup Edition. Two product options are reflected in the two installation options presented in this manual: to install with and without WebSphere Business Component Composer (WSBC Composer). The installation with WSBC Composer entails setting up the development and runtime environments, and all components in the Bank Teller Business Component (BTBC) can be installed. This installation option includes setting up the environment to run the Base Sample Application. The installation without WSBC Composer involves setting up only the development environment.

Who should use this guide

This document is for anyone who is responsible for installing version 4.0.3 of IBM Bank Teller Business Component, Enterprise Edition, or IBM Bank Teller Business Component, Workgroup Edition, and, where applicable, for running the sample application.

Typographic conventions

This document uses the following typographic conventions:

Convention	Description of convention
Italics	Used for emphasis or to refer to another document
`Monospace font`	Used to indicate text that you type yourself or screen messages
`< >`	Used to enclose descriptions of variables that you must type yourself

Keys are identified in this guide just as they appear on the keyboard (for example, **Enter**, **Tab**, **Ctrl**).

Hardware and software requirements

This section lists the hardware and software requirements for the runtime and development environments of the WebSphere Business Components Composer, Enterprise Edition, and WebSphere Business Components Composer, Workgroup Edition.

If you are installing IBM Bank Teller on top of WebSphere Business Components Composer V4.1.2, refer to its Installation Guide for hardware and software requirements with the exception of Oracle, which is not supported with IBM Bank Teller.

Client requirements

The following tables list the requirements for a client.

Client hardware	
Processor	• PII 233 MHz or higher (OS/2 Warp) • PII 266 MHz or higher (Windows NT, Windows 2000)
Memory minimum / recommended	• 32 MB minimum / 48 MB recommended (OS/2 Warp) • 48 MB minimum / 64 MB recommended (Windows NT, Windows 2000)
Hard drive	• 50 MB
Display minimum / recommended	• 800 x 600 minimum / 1024 x 768 recommended
Intranet test LAN base / recommended	• 16 MB token ring base / 100 BaseTx Ethernet recommended

Client environment	
Operating system	• Windows NT 4.0 with Service Pack 6.0a • Windows 2000 • OS/2 Warp
Browser	• Netscape Communicator 4.72 or higher with the Java Plug-in 1.2.2 or higher (Windows NT, Windows 2000) • Netscape Communicator 4.61 or higher (OS/2 Warp) • Internet Explorer 5.01 or higher with the Java Plug-in 1.2.2 or higher (Windows NT, Windows 2000)
Communication protocol	• TCP/IP
JRE (Java Runtime Environment)	• 1.1.8 (OS/2 Warp) • 1.1.8 (Windows NT, Windows 2000) if a JRE other than the one provided by the Java Plug-in is required.

Server requirements

The following tables list the requirements for the server.

Server hardware	
Processor	• PII 500 MHz or higher • RS/6000 • zSeries.

Server hardware	
Memory minimum / recommended	• 256 MB minimum / 512 MB recommended (Windows NT, Windows 2000, OS/2 Warp, and AIX.) • 512 MB (zSeries)
Hard drive	• 50 MB

Server environment	
Operating system	• Windows NT 4.0 with Service Pack 6.0a • OS/2 Warp Server for e-business • AIX 4.3.3 • Windows 2000 • OS/390 V2 R8
Web server	• Lotus Domino Go Webserver V4.6.2.6 (OS/2 Warp Server for e-business)
Application server	• IBM WebSphere Standard or Advanced Edition V3.02, or V3.5.2, or higher (Windows NT, AIX) • IBM WebSphere Application Server V1.1 (OS/2 Warp Server for e-business) • IBM WebSphere Application Server V3.5 (OS/390)
Communication protocol	• TCP/IP

Development environment requirements

The following tables list the requirements for the development environment.

Development hardware	
Processor	• PII 400 MHz or higher
Memory minimum / recommended	• 128 MB minimum / 256 MB recommended
Hard drive	• 500 MB
Display	• SVGA 1024 x 768
CD-ROM reader	• Installation and online publications

Development environment	
Operating system	• Windows NT 4.0 with Service Pack 6.0.a • Windows 2000
Integrated development environment	• VisualAge for Java Enterprise 3.5.2 or higher.
Browser	• Netscape Communicator 4.72 or higher with the Java Plug-in 1.2.2 or higher (Windows NT, Windows 2000) • Internet Explorer 5.01 or higher with the Java Plug-in 1.2.2 or higher (Windows NT, Windows 2000)

Development Workbench repository hardware*	
Processor	• PII 400 MHz or higher
Memory minimum / recommended	• 128 MB minimum / 128–196 MB recommended
Hard drive	• 3 GB
Display minimum / recommended	• 800 x 600 minimum / 1024 x 768 recommended

* This machine is only for supporting the Development Workbench repository. The repository can be also installed on a development workstation.

Development Workbench repository environment	
Operating system	• Windows NT 4.0 with Service Pack 6.0a • Windows 2000
Relational database management system	• IBM DB2 Universal Database V6.1 or higher
Java Development Toolkit	• JDK 1.2 or higher.

Engagement-specific requirements

Depending on the framework services you use, you may require other hardware and software. The following additional requirements apply to the type of workstation (client, server, or development) that accesses the framework service.

Hardware	
Framework service	**Additional requirements**
WOSA Device Service	• Any financial printer supporting WOSA interface
Forms-Based Printing service	• Any forms-based printer supported by the software used
LANDP MSR/E Device Service	• Any magnetic stripe reader/encoder supporting WOSA interface • Any magnetic stripe reader/encoder supported by the LANDP MSRE47## server.
Check Reader Device Service	• Any check reader supporting the asynchronous RS-232 protocol Amper Standard

Software	
Framework service	**Additional requirements**
Lu0 Connector	• IBM Communications Server for OS/2 5.0 or higher • IBM Communications Server for Windows NT 6.02 or higher • IBM Communications Server for AIX 5.0.4.2 or higher
Lu62 Connector	• IBM Communications Server for OS/2 5.0 or higher • IBM Communications Server for Windows NT 6.02 or higher • IBM Communications Server for AIX 5.0.4.2 or higher

Software	
Framework service	**Additional requirements**
MQ Connector	• MQSeries V5.1 (Windows NT, OS/2, AIX) • MQSeries V2.1 (OS/390)
CICS Connector	• IBM CICS Transaction Gateway V3.1
OTMA Connector	• IMS V6.1 with OTMA access
ITOC Connector	• IBM TCP/IP OTMA Connector (ITOC) V2.1.3
Electronic Journal service Store For Forwarding service Database Table Mapping service	• IBM DB2 Universal Database V6.1 or higher (Windows NT, OS/2 Warp, AIX, OS/390)[*]
WOSA Device Service	• Finance printer Support Program for WOSA/XFS 1.1 • WOSA/XFS Manager for Windows NT 2.0
Forms-Based Printing service	• JetForm Central 5.x or higher • FormsPath 2.5 or higher
LANDP MSR/E Device Service	• LANDP 4.0
Lotus Notes Access Service	• Notes client 4.6.1
JXFS Service	• J/XFS
Check Reader Device Service	• Java communications 2.0

[*] Other databases that fully support JDBC should also work, but this has not been tested.

Option 1: Installing IBM Bank Teller Business Component with WSBC Composer 4.0.6

The following sections explain how to install the IBM Bank Teller Business Component with WSBC Composer.

Installation files

The IBM Bank Teller Business Component installation program creates the following set of folders and files on the target machine.

Folder name	Description of contents
bin	Executable files used by the Online Information System
client	The set of definition files required on the client workstation when running the sample application.
dbtools	Scripts to manage database tables for the Agent Administration and Electronic Journal
dbtoolsbt	Scripts to manage the database tables for the following Bank Teller components: Branch Administration, Cash Drawer Management, and Foreign Exchange
desktop	Sample desktop XML and DTD files
docs	The Javadoc and framework documentation in HTML and PDF formats
dwide	The Development Workbench jar file (dsedw.jar) and ini files as well as a command file to run the Development Workbench
dwinstall	The Development Workbench installation programs
extras	The samples XML definition files for Agent Administration, Forwarding, and the Electronic Journal as well as a sample application for HTML clients
extrasbt	The set of XML definition files to be used with the sample operations for the Bank Teller components
html	The set of HTML pages, .JSP files, and images used to work with the Base Sample Application from a browser
ifx	A set of tools to manage the database tables for the IFX operations and the set of XML files for the IFX operations and the DTD
images	A set of .gif files used on the desktop and in the .JSP files
ivj	Features that should be added to the VisualAge Workbench to make the visual components of the product available from the Composition Editor palette
ivjrepository	Framework code that is exported to a VisualAge for Java repository

Folder name	Description of contents
jars	**dseall.jar**. All the framework classes (except those in the com.ibm.dse.tools. packages) in a .jar format as well as the Server Monitor utility **dsebt.jar**. The classes and resources needed for the Bank Teller components **dsesamp.jar**. The classes and resources needed in the client to run the sample application, in a .jar format
resources	Properties files to facilitate NLS (National Language Support)
server	The set of definition files required on the server workstation when running the sample application
services	Runtime files that are needed by some of the services of the framework
sgml2xml	Resource files for the SGML to XML translation tool and a .jar file (dsett.jar), as well as a command file to run the translation tool
support	Maintenance support files
tvl	Classes that send alerts to the Tivoli System from the framework
valtool	Resource files for the Validation Tool in a .jar file (dsevt.jar), as well as a command file to run the Validation Tool
xml	Sample files for the Electronic Journal client view and Desktop, and for creating Cash Drawer Management data and totaling rules
dse.ini	The default settings for the client workstation

Installing BTBC and WSBC Composer on a development workstation

Once you have all of the required software installed, you are ready to install the code and resources for BTBC and WSBC Composer on the development workstation.

Note: This section describes the steps to follow in order to install WebSphere Business Components Composer Version 4.0.6 and IBM Bank Teller Version 4.0.3. To install IBM Bank Teller Version 4.0.3 on top of WebSphere Business Components Composer Version 4.1.2, go to page 15.

To install WSBC Composer V4.0.6 and IBM Bank Teller V4.0.3, complete the following steps:

1. Insert the IBM Bank Teller Business Component CD.

2. Run the `setup.exe` file located in the **wsbcc** folder.

3. Follow the on-screen instructions. At the end of the installation, the Complete Installation wizard allows you to access to the *Release Notes* document, the *IBM Bank Teller Business Component Installation Guide* (this document), and the Online Information System. You can access this information at any time from the Windows **Start** button.

4. Start VisualAge for Java.

Note: When using VisualAge for Java in a team environment, you only need to perform step 5 on one development workstation.

5. From VisualAge for Java, import the following projects and packages from the repositories in the *<install_directory>*\ivjrepository directory into the VisualAge for Java repository:

From dseall.dat repository:

o   Project **WebSphere Business Components Composer V4.0.6**

o   Project **WebSphere Business Components Composer empty**

o   If Tivoli support is required, package **com.ibm.dse.sysmngment xxx_TVL**

From dsebt.dat repository:

o   Project **IBM Bank Teller Business Components V4.0.3**

The repositories in the <*install_directory*>\ivjrepository are no longer needed.

6.   Add the projects **WebSphere Business Components Composer v4.0.6** and **IBM Bank Teller Business Components v4.0.3** into your workspace. Depending on the projects already loaded in the workspace, problems may arise for some classes. "Appendix A: Fixing workspace problems" describes how to solve them.

7.   Restart VisualAge for Java.

8.   To load the GUI Beans for the framework, do the following:

a.   In the VisualAge for Java development environment, press **F2** and select **Features**

b.   Select **Add Features**, and select **DSE gui beans for v4.0**.

9.   To load the required features into your workspace, press **F2**, and select **Features**. Then select **Add Features**, and select then the required features from the list below.

Note: These feature versions apply to VisualAge for Java 3.5.2.

o   IBM WebSphere Test Environment 3.5.0.2. This feature provides the WebSphere Test Environment. It is required.

o   IBM XML Parser for Java 2.0.15. It is required.

o   Lotus Domino Java Library 4.6.1. This feature is only required if the Lotus Notes service is going to be used.

o   Access Builder for SAP R/3 Libraries 3.5. This feature is only required if the SAP Access service is going to be used.

o   Tivoli Connection 3.5. This feature is only required to send alerts to the Tivoli System.

o   IBM Common Connector Framework 3.5. This feature is only required if the MQ Connector service is to be used.

o   MQSeries Connector 1.1.1. This feature is only required if the MQ Connector service is to be used.

o   Connector CICS 3.1.1. This feature is only required if the CICS Connector service is to be used.

Testing the WSBC Composer development environment

This section describes how to test that the WSBC Composer development environment is correctly set up. To do this, you need to execute the Base Sample Application provided with the product. To facilitate any required debugging process, use the WebSphere Test Environment feature available in VisualAge for Java.

This procedure assumes that all the steps described in the procedure Installing WebSphere Business Components Composer on the development workstation have been performed.

To verify that the development environment has been correctly set up, do the following to run the Base Sample Application:

1. Start VisualAge for Java.

2. To launch the WebSphere Test Environment, do the following:

    a. Click **Workspace**. Then select **Tools** and select **WebSphere Test Environment**.

    b. In the WebSphere Test Environment Control Center window, click **Servlet Engine** and then click **Edit Class Path…**.

    c. To include all the loaded projects in the classpath, click **Select All** in the Class Path window.

    d. To close the window, click **OK**.

    e. Click **Start Servlet Engine**, and wait until the `Servlet Engine is started` message appears on the low left corner of the window.

3. To start the sample application server side, do the following:

    a. Go to the com.ibm.dse.samples.appl.StartServerServlet class.

    b. Bring up the pop-up menu, and select **Run** and then **Check Class Path...**. The Properties for StartServerServlet window appears.

    c. Select **Class path**, and click **Compute Now**. The required projects will be added to the path when you run StartServerServlet.

    d. Select **Program**, and type the following in the **Command line arguments** text field:
    `-p <install_directory>\server\dse.ini –s 127.0.0.1:8080`
    The argument **–p** indicates the server configuration file location and the argument **–s** indicates the server address and port number that the server will be listening to.
    Note: The WebSphere Test Environment servlet engine default http port is 8080. If you have changed this default, then use the new port number instead of 8080 in the **–s** argument.
    To check your current http port, open the default.servlet_engine file located in the VisualAge installdirectory\ide\project_resources\IBM WebSphere Test Environment\properties and look for the following entries:
    ```
    <transport>
      …          …          …
      <arg name="port" value="8080"/>
      …          …          …
    </transport>
      …          …          …
      <hostname-binding hostname="localhost:8080"
         servlethost="default_host"/>
      <hostname-binding hostname="127.0.0.1:8080"
         servlethost=default_host"/>
    ```
    The numbers in bold show your current http port number.

    e. To close the Properties window, click **OK**.

4. To run the class, click **Run**. The Framework Trace window appears, along with progress bars. The

last trace entry in the Framework Trace window should read `Server initiated`. In case of any problems, the Framework Trace window messages should explain the causes of the error.

5. To start the sample application client side, do the following:

   a. Go to the com.ibm.dse.samples.appl.OpenDesktop class.

   b. Bring up the pop-up menu, and select **Run** and then **Check Class Path...**. The Properties for OpenDesktop window appears.

   c. Select **Class path**, and click **Compute Now**. The required projects will be added to the path when you run OpenDesktop.

   d. Select **Program**, and type the following in the **Command line arguments** text field:

   ```
   -p http://127.0.0.1:8080/dse/dse.ini
   ```

   The argument **–p** indicates the client configuration file location. In this case the configuration file is located in the server home directory/dse. By default, the WebSphere Test Environment uses VisualAge installdirectory\ide\project_resources\IBM WebSphere Test Environment\hosts\defaul_host\default_app\web as its home directory. The installation program has installed in the home directory a folder named dse which contains configuration files and resources for running the Base Sample Application. If the default home directory has been modified, then move the dse folder and its subfolders to the new home directory.

   e. To close the Properties window, click **OK**.

   f. To check in the configuration file that the server address, the entities, and desktop addresses are correct, open the dse.ini configuration file located in the dse folder (see step d) and check that the addresses and port numbers match with the ones specified in the server side: in this case, 127.0.0.1:8080. See below in bold the data you have to check:

   ```
   <kColl id="realCSClient">
     <field id="serverName" value="http://127.0.0.1:8080"/>
     …        …        …
   <kColl id="paths">
     <field id="entities" value="http://127.0.0.1:8080/dse/client"/>
     <field id="desktop" value="http://127.0.0.1:8080/dse/desktop"/>
     <field id="bookmarkArea" value="http://127.0.0.1:8080/dse/desktop"/>
   </kColl>
   ```

6. To run the class, click **Run**. The Framework Trace window and progress bars display again. When the Application desktop window opens, check that the message `Startup process completed. Terminal ready` appears in the Desktop message area. In case of any problems, the trace window messages should explain the causes of the error, and an error message is displayed in the message area.

The development environment is now correctly set up. If you want to test it with operations, run an operation from the Desktop. For information on how to do this, see the Base Sample Application documentation in the Getting started section of the Online Information System.

Post-installation: Development Workbench

The Development Workbench repository is a shared data repository. It can be installed on a workstation that is only used for supporting the shared repository or on a development workstation. If you have installed all of the required software, ensure that JDK 1.2 or higher and the IBM DB2 zip file (db2java.zip) are available in the classpath.

The following sections describe how to set up the Development Workbench, including the repository and the user's workspaces.

Creating the Development Workbench repository

The Development Workbench repository is a set of DB2 tables. To create this repository, you must have a user with rights to create tables in the database.

To create the Development Workbench repository, follow these steps:

1. Using the DB2 utilities, create a new repository database. You can give it whatever database name you choose. For the purpose of explaining this procedure, it is called **dserepos** here.

2. To use the Control Center to configure the new database, follow these steps:

    a. Bring up the **dserepos** pop-up menu, and select **Configure...**.

    b. On the **Performance** tab, set the value of **Application heap size** to 20000.

    c. On the **Logs** tab, set the value of **Log file size** to 4000.

    d. On the **Logs** tab, set the value of the **Number of primary log files** to 5.

    e. To update the changes, click **OK**.

    Note: The values in steps b, c, and d are suggested values, which may change according to your database installation.

3. From install_directory\dwinstall, run **install_repos**. You will be prompted for user identification, password, and the URL to access the DB2 database.

4. Type the appropriate responses. For the URL, for example, type `jdbc:db2:`**dserepos** when the database is local; or `jdbc:db2://`*<remote machine>*/**dserepos**, for a remote server. The run process may take several minutes. At the end of the process, the message `Schema created` appears on the console.

5. Close the **install_repos** process.

The Development Workbench Repository is now created.

Creating user workspaces

Once the Development Workbench repository is created, you can assign users to it and create their workspaces. In order to do this, you must have user rights to create tables in the database.

In order to create user workspaces, follow these steps:

1. Using the DB2 utilities, create a new workspace database. You can give it whatever database name you choose. For the purpose of explaining this procedure, it is called **dsewks** here.

2. To use the Control Center to configure the new database, follow these steps:

    a. Bring up the **dbname** pop-up menu, and select **Configure...**.

    b. On the **Performance** tab, set the value of **Application heap size** to 20000.

    c. On the **Logs** tab, set the value of **Log file size** to 4000.

    d. On the **Logs** tab, set the value of the **Number of primary log files** to 5.

    e. To update the changes, click **OK**.

    Note: The values in steps b, c, and d are suggested values, which may change according to your database installation.

3. From *<install_directory>*\dwinstall, run **user_management**. The **Connection** dialog prompts you for the connection to the Development Workbench repository.

4. Type the URL. For example, type `jdbc:db2:`**dserepos** when the database is local or `jdbc:db2://`*<remote machine>*/**dserepos** for a remote server. The User Management windows displays.

5. To add the user for the new workspace, click **Add**. You will be prompted for user ID, password, and the URL of the new workspace database.

6. Type the appropriate responses. For the URL, for example, type `jdbc:db2:`**dsewks** when the database is local or `jdbc:db2://<remote machine>/`**dsewks** for a remote server.

7. Click **Create Workspace**, and then **OK**. The workspace for the user is created. The user must have rights to access and create tables in this workspace.

8. On the User Management tool, click **Exit**.

You have now assigned a user to the Development Workbench repository and created his or her workspace.

Working with the Development Workbench repository

To work with the Development Workbench, run **run_dev_workbench** from <*install_directory*>\dwide and follow the instructions in the *Development Workbench Handbook*, which is available in PDF format from the Online Information System.

Post-installation: Managing database tables

If you are going to work with the IFX messages and transactions, skip this section and follow the instructions in the online information system. To find this information, click **IFX Messages and Transactions > How do I > Manage Database Tables**.

Using a set of scripts that were copied during the product installation, you can create, initialize, and drop the database tables required to use the Agent Administration and Electronic Journal samples. To create, drop, initialize, or purge the sample transactions in the database tables of the Branch Administration, Cash Drawer Manager, and Foreign Exchange components, you can use the appropriate scripts located in the folder of each component. The script files use the following naming convention: createXXX, dropXXX, initializeXXX, and purgeXXX.

Some of the database tables can be managed at a component level.

Creating the database tables

To create the database tables, use the procedures in this section.

Note: For the op_system argument, type one of the following:

- `Winnt` (for Windows NT or Windows 2000)

- `Aix` (for AIX)

- `Os2` (for OS/2)

- `OS390` (for OS/390)

Create the Agent Administration database tables

To create the Agent Administration database tables, execute the script file `createAgentAdminTables` located under <*install_directory*>\dbtools\<*op_system*>\tableDefinition\aa. Running the script creates all the database tables required by the Agent Administration component.

Create the Electronic Journal database tables

To create the Electronic Journal database tables, execute the script file `createElectronicJournalTables` located under

<install_directory>\dbtools*<op_system>*\tableDefinition\ej. The script requires an argument, which is the path to the server-side framework definition file, for example, c:\dse\server.dse.ini. Running the script creates all the tables required by the Electronic Journal component.

Create the Branch Administration, Cash Drawer Manager, and Foreign Exchange database tables

To create all database tables required by the Branch Administration, Cash Drawer Manager, and Foreign Exchange components, execute the script `createTx_Tables` located under *<install_directory>*\dbtoolsbt*<op_system>*\tableDefinition\tx.

The script needs an argument, which is the full path to the *<install_directory>*\dbtoolsbt*<op_system>*\tableDefinition\tx\ directory.

Initializing the database tables

You can load the tables for the Agent Administration, Branch Administration, Cash Drawer Management, and Foreign Exchange tables with sample data for a number of users. Note that the Electronic Journal tables do not require this initialization.

Initialize the Agent Administration database tables

To load the sample data in the Agent Administration tables, perform the following steps:

1. Locate the sample data in the file **branch_user.dat** located under **<install_directory>\dbtools\<op_system>\utilities**, where .op_system is "Winnt" for Windows NT or Windows 2000, "Aix" for AIX, and "Os2" for OS/2.

2. Copy the **autoload.cfg** and **autoload.def** files from *<install_directory>*\dbtools\op_system\utilities to **c:** for Windows and OS/2, or / for AIX.

3. Create a directory called `security` under the dse root directory, for example, `c:\dse\security`.

4. Copy the **branch_users.dat** file from **install_directory\dbtools\op_system\utilities** into the newly created security directory.

5. If necessary, edit the file **autoload.def** to point to your **branch_user.dat** file. The default path is c:\dse\security\branch_users.dat for Windows or OS/2, and /dse/security/branch_users.dat for AIX.

6. Edit the **autoload.cfg** file, and change the default `JDBCUserID="admin"` and `JDBCPassword="password"` to a valid ID and password of a user with the authority to create tables in the database.

7. To avoid creating this user in the USERS table (optional), edit the **autoload.def** file and change `"append=yes"` to `"append=no"`.

8. Edit the server **dsesrvce.xml**, and change `JDBCUserID="admin"` and `JDBCPassword="password"` to a valid ID and password of a user with the authority to create tables in the database.

9. Run the script `initializeAgentAdminTables` located in *<install_directory>*\dbtools*<op_system>*\tableDefinition\aa.

Note: For security reasons, the JDBCUserID and JDBCPassword values in both autoload.cfg and dsesrvce.xml should be changed to values that will not compromise the security of the system.

Initialize the Branch Administration, Cash Drawer Management, and Foreign Exchange database tables

Before you can load the database tables for the Branch Administration, Cash Drawer Management, and Foreign Exchange components with sample data, you must have initialized the Agent Administration database tables.

To initialize all the tables required by the Branch Administration, Cash Drawer Management, and Foreign Exchange components, run the script `initializeTx_Tables` located under `<install_directory>\dbtoolsbt\<op_system>\tableDefinition\tx`. The script needs an argument, which is the full path to the `<install_directory>\dbtoolsbt\op_system\tableDefinition\tx\` directory.

The database tables for Branch Administration will insert data for a branch with id = '0000000001' and users with IDs as defined in the Initialize the Agent Administration database tables procedure above. The database tables for Cash Drawer Manager will contain cash drawer data for a branch with id='0000000001', assigned to users with the IDs SUPV1, SUPV2, TELLER1, TELLER2, as defined by the Agent Administration sample data.

Dropping the database tables

You can drop the database tables for the Agent Administration, Electronic Journal, Branch Administration, Cash Drawer Management, and Foreign Exchange components using the instructions in this section.

Drop the Agent Administration database tables

To drop the Agent Administration database tables, execute the script file `dropAgentAdminTables` located under `<install_directory>\dbtools\<op_system>\tableDefinition\aa`.

Drop the Electronic Journal database tables

To drop the Electronic Journal tables, execute the script file `dropElectronicJournalTables` located under `<install_directory>\dbtools\<op_system>\tableDefinition\ej`. The script requires an argument, which is the path to the server-side framework definition file, for example, c:\dse\server.dse.ini.

Drop the database tables for Branch Administration, Cash Drawer Management, and Foreign Exchange

To drop all the tables for the Branch Administration, Cash Drawer Management, and Foreign Exchange components, run the script `dropTx_Tables` located under `<install_directory>\dbtoolsbt\<op_system>\tableDefinition\tx`. The script needs an argument, which is the full path to the `<install_directory>\dbtoolsbt\<op_system>\tableDefinition\tx\` directory.

Option 2: Installing the IBM Bank Teller Business Component with Composer 4.1.2

The option describes how to install IBM Bank Teller version 4.0.3 on top of WebSphere Business Components Composer version 4.1.2. It assumes that WebSphere Business Component Composer version 4.1.2 is already installed.

Installation files

The IBM Bank Teller Business Component (BTBC) installation program creates the following set of folders and files on the target machine.

Folder name	Description of contents
bin	Executable files used by the Online Information System
dbtoolsbt	A set of tools to manage the database tables for the IBM Bank Teller components
docs	The Javadoc and the framework documentation in HTML and PDF formats
extrasbt	The set of XML definition files to be used with the sample operations for the IBM Bank Teller components
ifx	A set of tools to manage the database tables for the IFX operations and the set of XML files for the IFX operations and the DTD
ivjrepository	Framework code that is exported to a VisualAge for Java repository
jars	**dsebt.jar**. The classes and resources needed for the IBM Bank Teller components
resources	Properties files to facilitate NLS
xml	Sample files for the Electronic Journal client view and Desktop, and for creating Cash Drawer Management data and totaling rules

Installing BTBC on the development workstation

Once you have all of the required software installed, you are ready to install the code and resources for the IBM Bank Teller Business Component on the development workstation. To do this, complete the steps that follow.

Note: This section describes how to install IBM Bank Teller version 4.0.3 on top of WebSphere Business Components Composer version 4.1.2.

1. Insert the IBM Bank Teller Business Component CD.

2. Run the `setup.exe` file located in the **btbc** folder.

3. Follow the on-screen instructions. At the end of the installation, the Complete Installation wizard allows you to access to the Release Notes document, the *IBM Bank Teller Business Component Installation Guide* (this document), and the Online Information System. This information is also available at any time from the Windows **Start** button.

4. Start VisualAge for Java.

Note: When using VisualAge for Java in a team environment, you only need to perform step 5 on one

development workstation.

5. From VisualAge for Java, import the following project from the **dsebt.dat** repository in the install_directory\ivjrepository directory into the VisualAge for Java repository:

```
Project IBM Bank Teller Business Components v4.0.3
```

The repository in the install_directory\ivjrepository is no longer needed.

6. Add the project **IBM Bank Teller Business Components v4.0.3** into your workspace.

The installation of the IBM Bank Teller Business Component is now complete.

Package Dependencies

"Appendix A: Fixing Workspace Problems" provides a table of package dependencies. However, these packages should already exist in the VisualAge for Java workspace.

Post-installation: Managing database tables

If you are going to work with the IFX messages and transactions, skip this section and follow the instructions in online information system. To find this information, click **IFX Messages and Transactions > How do I > Manage Database Tables**.

Using a set of scripts that were copied during the product installation, you can create, initialize, and drop the database tables required to use the Branch Administration, Cash Drawer Management, and Foreign Exchange components. The script files use the following naming convention: createXXX, dropXXX, initializeXXX, and purgeXXX.

Creating the database tables

To create all the tables required by the Branch Administration, Cash Drawer Manager, and Foreign Exchange components, execute the script `createTx_Tables` located under `<install_directory>\dbtoolsbt\<op_system>\tableDefinition\tx`. For the op_system argument, use one of the following:

- Winnt (for Windows NT or Windows 2000)
- Aix (for AIX)
- Os2 (for OS/2)
- OS390 (for OS/390)

The script needs an argument, which is the full path to the install_directory\dbtoolsbt\op_system\tableDefinition\tx\ directory.

Initializing the database tables

Before you can load the database tables for Branch Administration, Cash Drawer Management, and Foreign Exchange with sample data, you must have completed the "Initialize the Agent Administration database tables" procedure as described in the Composer 4.1.2 installation.

To initialize all the tables required by the Branch Administration, Cash Drawer Management, and Foreign Exchange components, run the script `initializeTx_Tables` located under `<install_directory>\dbtoolsbt\<op_system>\tableDefinition\tx`. The script needs an argument, which is the full path to the `<install_directory>`\dbtoolsbt\`<op_system>`\tableDefinition\tx\ directory.

The tables for Branch Administration will insert data for a branch with id = '0000000001' and users with IDs as defined in the initialization of Agent Administration database tables. The database tables

for Cash Drawer Manager will contain cash drawer data for a branch with id='0000000001', assigned to users with the IDs SUPV1, SUPV2, TELLER1, TELLER2, as defined by the Agent Administration sample data.

Dropping the database tables

To drop all database tables for the Branch Administration, Cash Drawer Management, and Foreign Exchange components, run the script `dropTx_Tables` located under `<install_directory>\dbtoolsbt\<op_system>\tableDefinition\tx`. The script needs an argument, which is the full path to the install_directory\dbtoolsbt\op_system\tableDefinition\tx\ directory.

Installing and running the Online Information System

This section describes how to install and run the Bank Teller Online Information System, which contains the documentation for Bank Teller 4.0.1. For troubleshooting information, see "Appendix C: Online Information System troubleshooting."

Run the Online Information System

You can run the IBM Bank Teller Online Information System by doing either of the following:

- From the **Start** menu, select **IBM Bank Teller V4.0.3** and then select **Online Information System**. (If you installed IBM Bank Teller on top of WebSphere Business Components Composer V4.1.2)

- From the **Start** menu, select **WSBC Composer & IBM Bank Teller** and then select **Online Information System**. (If you installed IBM Bank Teller and WebSphere Business Components Composer V4.0.6 together).

Configure the Bank Teller Online Information System to run on a Windows server

You can install and configure the IBM Bank Teller Online Information System to run on a Windows NT or a Windows 2000 Web server so that other members of your organization can view and search the online help over a network without having to install the NetQuestion and help-system code on their workstations.

To perform this network installation, you must have Web server software — such as IBM HTTP Server, Microsoft Peer Web Services (PWS), or Microsoft IIS — installed on the server. The Web server must have a scripts directory. (In PWS and IIS, your scripts directory is usually located under x:\inetpub.)

After installing the Web server software, complete the following steps to install and configure the Online Information System:

1. Install the IBM Bank Teller product on the Web server.

2. Copy the following files from the NetQuestion installation directory (for example, x:\imnnq) to the `x:\inetpub\scripts` directory, if they are present in the NetQuestion installation directory:

   - `vahwebx.exe`
   - `vahwebx.cat`
   - `vahelp.cfg`
   - `tlrfoot.htm`
   - `tlrhead.htm`
   - `tlrsrch.exe`
   - `*henus.htm`

3. Edit the `imnmap.dat` file, which is in the `<netq_install_dir>\instance\help\data\` directory and contains the starting part of the Web address for each index. Change all occurrences of the substring:

   `http://localhost:49213/cgi-bin`

   to

   `http://<server.city.domain.organization>/scripts`

(such as `http://cobweb.stl.ibm.com/scripts`).
This change causes the links generated for search hits to yield a remote (non-localhost) Web address so that a user can follow the links from any computer.

4. In the documentation installation directory (for example, x:\ibm\wsbc\1.2\doc), edit the `hgssrch.htm` and `hgcsrch.htm` files. Change all occurrences of

   `http://localhost:49213/cgi-bin`

   to

   `http://<server.city.domain.organization>/scripts`

5. Copy `tlrstar*.gif` in the NetQuestion installation directory to a new `icons` subdirectory under `inetpub\wwwroot`.

6. Edit the product configuration file, `tlrhelp.cfg` in the documentation installation directory, and change the following entries to the values shown:

   ```
   HTML_HOSTNAME=<server.city.domain.organization>
   CGI_BIN_DIR=scripts
   START_LITE_DAEMON=0
   START_NETQ_DAEMON=0
   ```

You have now completed the steps required to configure the IBM Bank Teller Online Information System to run on the Web server.

Run the Online Information System on a Windows server

To run the IBM Bank Teller Online Information System on the Web server, launch the following URL from any browser:

`http://<Hostname>/scripts/vahwebx.exe/help/teller/Extract/0/index.htm`

Appendix A: Fixing workspace problems

Because you can choose to load only selected packages, this appendix indicates the co-requisite framework packages in order to get a clean development environment. In addition to the packages provided by the required features for the IBM Bank Teller Business Component (see step 9 of the "Installing BTBC and WSBC on the development workstation" procedure), other external packages can also be required. See "Appendix B: Obtaining missing prerequisites."

Packages that contain services might not be needed in all the environments. Replace any of the com.ibm.dse.services packages that you are not going to use with their empty version. Note that some packages may also be available from sources other than the ones presented here.

Note: All package names in the framework are prefixed with **com.ibm.dse**.

Package name	Source	Co-requisite framework packages	Description
appl.aa	IBM Bank Teller	base applsrv.aa	Agent Administration
appl.acs.ifx (*)	IBM Bank Teller	appl.bas.ifx applsrv.aa applsrv.ba applsrv.cm base cs.ifx.common services.jdbc services.comms	Access Control domain IFX operations
appl.ba	IBM Bank Teller	base service.jdbc appl.ba.base applsrv.ba applsrv.aa applsrv.cm	Branch Administration
appl.ba.base	IBM Bank Teller	base applsrv.aa	Branch Administration base
appl.ba.client	IBM Bank Teller	appl.ba.base base clientserver	Branch Administration client sample
appl.bas.ifx (*)	IBM Bank Teller	applsrv.aa applsrv.ba applsrv.cm base cs.ifx.common services.jdbc	Branch Administration domain IFX operations
appl.base	IBM Bank Teller	applsrv.aa base	Teller operations
appl.cdms.ifx (*)	IBM Bank Teller	applsrv.aa applsrv.cm base cs.ifx.common services.jdbc	Cash Drawer Management domain IFX operations
appl.cm.server	IBM Bank Teller	base applsrv.cm applsrv.aa	Cash Drawer Management server

Package name	Source	Co-requisite framework packages	Description
appl.common.ifx (*)	IBM Bank Teller	applsrv.aa base services.comms services.jdbc	IFX common steps
appl.cs	IBM Bank Teller	base clientserver	Customer Session
appl.css.ifx (*)	IBM Bank Teller	appl.ts.ifx base cs.ifx.common services.comms	Customer Session domain IFX operations
appl.ej.base	WSBC Composer	base base.types gui	Electronic Journal Viewer
appl.ej.client	WSBC Composer	clientserver ej.base gui	Electronic Journal Viewer (client)
appl.ej.server	WSBC Composer	base services.jdbc	Electronic Journal Viewer (server)
appl.forwarding.base	WSBC Composer	base	Forwarding
appl.forwarding.server	WSBC Composer	base services.jdbc	Forwarding (server)
appl.overrides	IBM Bank Teller	base applsrv.aa	Sample override operation
appl.store	IBM Bank Teller	base services.jdbc	Store for Forwarder steps
appl.to	IBM Bank Teller	appl.ba.base applsrv.ba applsrv.cm base services.jdbc	Teller operations and operation steps
appl.to.client	IBM Bank Teller	base clientserver gui	Teller operations client sample views
appl.ts.ifx (*)	IBM Bank Teller	applsrv.cm base cs.ifx.common services.jdbc	Transactions domain IFX operations
appl.util.ifx (*)	IBM Bank Teller	base services.jdbc	IFX utilities
application	WSBC Composer	base	Application enablers
applsrv.aa	WSBC Composer	base services.jdbc	Agent Administration (Access Control)
applsrv.aa.tools	WSBC Composer	applsrv.aa	Agent Administration tools
applsrv.ba	IBM Bank Teller	base service.jdbc application appl.ba.base appl.ba	Branch Administration services
applsrv.cm	IBM Bank Teller	base services.jdbc	Cash Drawer Management
applsrv.fx	IBM Bank Teller	base services.jdbc	Foreign Exchange samples

Package name	Source	Co-requisite framework packages	Description
automaton	WSBC Composer	base	Flow Processor (Automaton)
automaton.ext	WSBC Composer	automaton base desktop gui	Automaton extensions
automaton.html	WSBC Composer	base automaton cs.html	Automaton for HTML clients
base	WSBC Composer	base.types clientserver	Base framework
base.types	WSBC Composer	base	Typed Data
base.types.ext	WSBC Composer	base base.types	Typed Data extensions
clientserver	WSBC Composer	base	Base for client/server subsystems
cs.html	WSBC Composer	automaton.html base clientserver	HTML client.
cs.java	WSBC Composer	base clientserver cs.servlet	Client/server for Java clients
cs.servlet	WSBC Composer	base clientserver sysmngment	Client/server using servlets
cs.xml	WSBC Composer	base clientserver cs.java cs.servlet	XML Connector
desktop	WSBC Composer	automaton base gui	Customizable Desktop
gui	WSBC Composer	base	Visual Beans
gui.jspbeans	WSBC Composer	base cs.html gui.jsputil gui.jsputil.css	JSP Beans
gui.jsputil	WSBC Composer	None	Utility classes for JSP Beans
gui.jsputil.css	WSBC Composer	None	Style sheets support for JSP Beans
jxfsds.wosamsd	WSBC Composer	wosabean	J/XFS device service for WOSA magnetic stripe devices
jxfsds.wosaptr	WSBC Composer	wosabean	J/XFS device service for WOSA printer devices
samples.aa.client	IBM Bank Teller	base clientserver samples.appl desktop	Agent Administration (client)
samples.aa.desktop	IBM Bank Teller	base desktop clientserver samples.appl	Agent Administration desktop
samples.aa.server	WSBC Composer	applsrv.aa	Agent Administration sample

Package name	Source	Co-requisite framework packages	Description
samples.appl	WSBC Composer	automaton.ext base base.types clientserver cs.servlet desktop gui services.comms services.jdbc	Base Sample Application
samples.cm.client	IBM Bank Teller	base clientserver	Cash Drawer Management (client)
samples.comms	WSBC Composer	base services.comms	Communications Components samples
samples.ej.server	WSBC Composer	base services.jdbc	Electronic Journal Viewer sample
samples.formsprint	WSBC Composer	base services.formsprint	Forms print sample for Forms-Based Printing
samples.forwarding.view	IBM Bank Teller	base clientserver samples.txn.test	Forwarder view
samples.html	WSBC Composer	base clientserver cs.html	HTML Sample Application
samples.landp	WSBC Composer	base services.landp	LANDP sample
samples.overrides.view	IBM Bank Teller	gui base	Overrides view
samples.sap	WSBC Composer	base clientserver services.sap	SAP Access sample
samples.store.server	IBM Bank Teller	base services.jdbc	Store For Forwarding (server)
samples.txn.client	IBM Bank Teller	base services.jdbc services.comms	Bank Teller sample transactions (client)
samples.txn.host	IBM Bank Teller	base services.comms	Bank Teller sample transactions (host)
samples.txn.server	IBM Bank Teller	base applsrv.cm applsrv.fx services.jdbc services.comms	Sample transactions for Bank Teller components
samples.txn.view	IBM Bank Teller	base gui	Bank Teller sample transaction views
samples.wosa	WSBC Composer	base services.wosa	WOSA sample
services.appltables	WSBC Composer	base services.jdbc	Application Tables Service
services.checkreader	WSBC Composer	base	Check Reader Device Service
services.cics	WSBC Composer	base services.comms	CICS Connector
services.comms	WSBC Composer	base	Communications Components

Package name	Source	Co-requisite framework packages	Description
services.formsprint	WSBC Composer	base	FormsPath service of Forms-Based Printing
services.fpprint	WSBC Composer	base services.formsprint	Forms print service of Forms-Based Printing
services.itoc	WSBC Composer	base services.comms	ITOC Connector
services.jdbc	WSBC Composer	application base	JDBC services
services.jfprint	WSBC Composer	base services.formsprint	JetForm service of Forms-Based Printing
services.jxfs	WSBC Composer	base	JXFS Service
services.jxfs.msd	WSBC Composer	base services.jxfs	J/XFS magnetic stripe device
services.jxfs.ptr	WSBC Composer	base services.jxfs	J/XFS printer
services.landp	WSBC Composer	base	LANDP MSR/E Device Service
services.ldap	WSBC Composer	base. services.ldap.model	LDAP Access Service
services.ldap.model	WSBC Composer	base services.ldap	LDAP Access Service model
services.mq	WSBC Composer	base services.comms	MQ Connector
services.notes	WSBC Composer	base	Lotus Notes Access Service
services.otma	WSBC Composer	base services.comms	OTMA Connector
services.sap	WSBC Composer	base	SAP Access Service
services.wosa	WSBC Composer	base	WOSA Device Service
sysmngment	WSBC Composer	base	Tivoli System Management Modules
tools.servermonitor	WSBC Composer	base gui	Server Monitor
tools.translator	WSBC Composer	None	XML Connector
tools.validation	WSBC Composer	tools.validation.wizards	External Definition Files Validation Tool
tools.validation.wizards	WSBC Composer	tools.validation	Validation Tool wizards
tools.workbench.base	WSBC Composer	tools.workbench.gui tools.workbench.tbg	Development Workbench
tools.workbench.gui	WSBC Composer	tools.workbench.base tools.workbench.util tools.workbench.wizards	Development Workbench
tools.workbench.tbg	WSBC Composer	base	Development Workbench
tools.workbench.util	WSBC Composer	base tools.workbench.base tools.workbench.gui tools.workbench.tbg	Development Workbench
tools.workbench.wizards	WSBC Composer	tools.workbench.base tools.workbench.gui tools.workbench.util tools.workbench.wizards	Development Workbench
wosabean	WSBC Composer	base	WOSA Bean

(*) These packages provide IFX messages support and require the IFX Connector available in WebSphere Business Components Composer version 4.1.2.

Appendix B: Obtaining missing prerequisites

Use the following table to locate and obtain any missing prerequisite packages.

Required packages	How to get them
com.ibm.db2.*	Import the zip file (db2java.zip) available from the IBM DB2 Universal Database product into the repository, and load it into your workspace.
javax.comm	Java Communications. A .jar file with this package is available from www.javasoft.com. Import this file into the repository, and load it into your workspace.
com.qic.FPPrint	Contact the qic representative in your country.
com.ibm.landp	This package is available from the LANDP product. Import this file into the repository, and load it into your workspace.
com.jxfs.*	Download the J/XFS .jars files from www.jxfs.com and import them into the repository.

Appendix C: Online Information System troubleshooting

This section contains solutions to problems that you may experience when using the IBM Bank Teller Online Information System.

Online Information System does not launch

If nothing happens, or the Online Information System does not display properly when you try to launch it, do the following:

1. Open a command prompt.

2. Change to the NetQuestion installation directory (for example, x:\imnnq_nt).

3. Run the following command:

   ```
   httpdl -r httpd.cnf
   ```

4. Launch the Online Information System again, either from the **Documentation** desktop icon or the **Start** menu.

Online Information System for VisualAge for Java or DB2 does not run

If, after you install the IBM Bank Teller Online Information System, the Online Information System for VisualAge for Java or DB2 will not run, run the **Repair** installation option for those products. This reinstalls their help systems.

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Canada Ltd. Laboratory
B3/KB7/8200/MKM
8200 Warden Avenue
Markham, Ontario, Canada L6G 1C7

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems.

Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrates programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. You may copy, modify, and distribute these sample programs in any form without payment to IBM for the purposes of developing, using, marketing, or distributing application programs conforming to IBM's application programming interfaces.

Trademarks and service marks

The following terms are trademarks of International Business Machines Corporation in the United States, or other countries, or both:

AIX
CICS
DB2
DB2 Universal Database
e-business
IBM
LANDP
MQSeries
OS/2 Warp
OS/390
RS/6000
VisualAge
WebSphere

Lotus, Domino, Lotus Notes, and Notes Mail are trademarks of the Lotus Development Corporation in the United States, other countries, or both.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

MMX, Pentium, and ProShare are trademarks or registered trademarks of Intel Corporation in the United States, other countries, or both.

UNIX is a registered trademark in the United States, other countries, or both and is licensed exclusively through X/Open Company Limited.

Rational Rose is a registered trademark of Rational Software Corporation.

Other company, product, and service names may be trademarks or service marks of others.

End of document